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in 4 hours, and 252 of them were Perseids. Of the April shower in 1873 18 Lyraids were seen, and 14 in 1874. In regard to the minor displays, the radiant-points have been determined from a smaller number of meteors, but in cases (and they were found numerous) where the number were insufficient to indicate them, the observations were discarded.

Mr. Greg's List (1874), to which references are made in the table, is published in *British Association Report*, 1874.

Observed Courses of 71 Bright Shooting Stars, seen at Bristol from November 1872 to March 1876.

By William F. Denning, Esq., F.M.S.

(*Communicated by R. S. Greg, Esq., F.R.A.S., F.G.S.*)

The bright shooting stars, whose apparent paths are recorded in the following list, were seen either during occasional watches for them or casually. The table only includes those estimated to equal or excel 1st mag. stars, and does not comprise the total number of such meteors seen here within the interval mentioned, for during the fine showers of November 27, 1872, and August 10, 1874, the paths of many of them were not noted, attention being mainly directed to the aggregate numbers visible, to eye-estimations of the radiant-points, and to other details.

The times of apparition may be relied on as accurate to within a minute or so; but in some cases a meteor was observed by me when absent from home, and on such occasions a watch had to be consulted for the time, which, however, I afterwards verified, and hence there is little chance of error on this account.

The magnitudes given are those of *maximum* brilliancy, and the comparisons are with planets or 1st mag. stars.

The observed paths were projected on a celestial globe, and the R.A.'s and Declinations of beginning and ending, together with the length of path, read off, the latter element being less carefully noted than the two former, which give the more important one of *direction*.

I have affixed a column giving the probable "Radiant by stars," and in finding these positions referred, in many doubtful cases, to Mr. Greg's "General Comparative Table of Radiant Positions and Durations of Meteor Showers" (*B. A. Report*, 1874), which is continued and extended from a similar catalogue by the same author in the *Monthly Notices R. A. S.*, vol. xxxii., pp. 345–55.

The column of "Notes" indicates either the path of the meteor amongst the stars, the rate of motion, or the appearance of a train and its duration.

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List of the Observed Courses of 71 *Bright Shooting Stars, seen at Bristol during the Period from November* 1872 *to March* 1876.

	Date.	Mean Time.	Mag.	Observed Path. From R.A.		To R.A.		Length of Path	Direction or Radiant by Stars.	Notes.
				R.A.	Dec. N.	R.A.	Dec. N.			
	1872.	h m		°	°	°	°	°		
1	Nov. 23	7 20	> ♀	18	44	131	63	60	γ Andromedæ.	2 secs.; long path.
2	25	8 5	1	150	63	165	61	7	α Aurigæ.	Between the Pointers.
3	27	5 50	♀	162	69	171	60	10	γ Andromedæ.	Fireball; slow; sparks.
4-7	,,	5 55	1	159	77	182	58	20	γ Andromedæ.	Average course of 4 bright meteors, seen in rapid succession, in a clear space in North.
8	28	5 45	1	55	74	73	27	22	α Persei.	↓ Fell vertically, leaving sparks.
9	Dec. 2	9 30	Sirius	154	78	268	76	22	Gemini?	Train for 2 secs.; across *Ursa Minor*.
10	26	7 58	> ♀	343	22	338	4 S.	26	β Pegasi.	Fireball; illuminated sky, like lightning.
11	31	12 27	1	164	15	162	3 N.	13	δ Leonis.	In *Leo*.
12	,,	12 42	Sirius	130	5 S.	140	25 S.	21	θ Geminorum.	1½ sec.; west of *Cor Hydræ*.
	1873.									
13	Apr. 19	9 28	1	295	46	316	51	14	α Lyræ.	Slow; through *Cygnus*.
14	20	9 28	1	292	55	360	72	32	α Lyræ.	Slow; train; long path.
15	,,	10 55	1	225	19	246	16	20	α Boötis.	Slow; just above β and γ *Serpentis*.
16	21	11 7	1	295	45	309	49	10	α Lyræ.	Train; began near δ *Cygni*.
17	30	9 25	1	218	14	233	13	14	α Boötis.	Train 1½ sec.; slow.
18	May 1	9 15	1	181	24	182	2	21	ε Ursæ.	Train 1 sec.; slow.

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19	June 25	10 58	1	132	56	120	53	6	β Ursæ.	↘ Towards *Lynx*.
20	28	11 12	1	298	87	336	73	14	β Ursæ.	↗ Inclined upwards from *Polaris*.
21	July 20	9 26	1	124	62	106	52	19	Hercules.	↘ Towards *Lynx*.
22	28	11 32	♃	210	49	200	38	14	β Pegasi.	↓ η *Ursæ* to *Cor Caroli*.
23	,,	11 48	1	202	44	193	36	10	Draco ?	Rapid ; 2° E. of *Cor Caroli*.
24	30	10 45	1	42	43	45	36	8	χ Persei.	Near *Algol*.
25	Aug. 2	11 40	♃	43	54	62	56	12	β Pegasi.	↙ Began near η *Persei*.
26	7	9 33	2 × ♀	190	59	195	30	30	Polaris ?	Train for 7 secs. ; a fireball.
27	9	10 15	♀	41	75	196	73	30	χ Persei.	← Long path.
28	,,	10 29	1	37	45	50	42	10	ζ Cygni.	↙ Rapid ; between α and β *Persei*.
29	,,	11 25	1	337	59	304	50	20	χ Persei.	↗ Inclined upwards.
30	,,	11 29	1	28	41	12	46	12	Pleiades,	↑ Shot upwards ; train for 3 secs.
31	11	8 57	1	360	35	353	27	11	χ Persei.	⇢ Horizontally.
32	,,	9 11	1	11	40	21	29	13	δ Cephei.	↓ Vertical ; slow.
33	Dec. 17	7 48	1	284	65	283	57	8	Draco ?	Rapid.
34	22	7 59	1	59	44	39	52	16	α Aurigæ.	Rapid ; across α *Persei*.
35	1874. Jan. 6	10 20	1	...	...	...	...	...	...	↓ Slightly east of *Cor Hydræ* ; almost vortical ; near horizon ; very slow ; red ; Radiant at θ *Gem.* ; seen in bright moonlight.
36	Apr. 11	9 18	♃	243	47	278	50	24	β Boötis.	Very slow ; near β and γ *Draconis*.
37	19	10 11	1	218	13	216	4 S.	17	β Boötis.	Train ; began at ζ *Boötis*.
38	20	10 6	1	268	46	276	32	15	Draco ?	Train ; west of α *Lyræ*.

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No	Date.	Mean Time.	Mag.	Observed Path				Length of Path.	Direction or Radiant by Stars.	Notes.
				Fmro		To				
				R.A.	Dec. N.	R.A.	Dec. N.			
	1874.	h		°	°	°	°	°		
39	April 20	11 48	1	280	26	286	13	15	α Lyræ.	Train; towards ε and ζ *Aquilæ*.
40	„	12 31	1	280	8	283	2 S.	11	α Lyræ.	Rapid; near horizon.
41	„	12 49	1	313	30	326	26	10	α Lyræ.	Rapid; across ζ *Cygni*.
42	Aug. 18	11 36	Sirius	24	36	68	44	33	α Andromedæ.	Slow; long path.
43	Sept. 1	8 49	?	...	...	...	...	...	...	Bright meteor; train; under η *Ursæ Majoris* for several minutes; an intense flash seen through clouds at the time stated.
44	6	8 40	♃	275	20	255	12 S.	37	δ Cygni.	Long path; train 1 sec.
45	Oct. 18	10 48	1	19	32	5	43	16	α Arietis.	Rapid; across the Nebula in *Andromeda*.
46	19	11 35	1	58	23	56	12	11	ν Orionis.	Rapid; train.
47	21	7 59	1	281	54	257	50	15	α Andromeda.	Very rapid; between β and γ *Draconis*.
48	„	11 6	Sirius	56	4	32	4 S.	25	ν Orionis.	Bright train; rapid.
49	22	7 34	1	142	56	129	58	10	?	Rapid; in *Ursa Major*, near θ.
50	31	8 23	1	169	77	137	60	19	Lyra.	Very slow.
51	Nov. 7	5 58	Sirius	313	70	335	57	16	Ursa Minor.	Very rapid; through *Cepheus*.
52	10	8 38	1	134	48	153	46	13	α Tauri.	Slow; between θ and λ *Ursæ*.
53	„	11 0	> ♀	43	30	7	4 S.	47	ν Orionis.	Very slow; long train, for 3 secs.; white.
54	„	11 11	1	20	6 S.	14	12 S.	9	ν Orionis.	A mere flash.
55	11	9 44	♀	31	6 S.	24	13 S.	9	α Tauri.	Slow; from *Mira* to ζ *Ceti*.

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56	1875. July	7	10	54	♃	37	64	25	47	15	β Ursæ.	Under *Cassiopeia.*
57		”	12	2	♀	357	37	15	48	17	β Pegasi.	Train for 3 secs. ⎫ ↓2
58		”	”	”	♃	At right angle to preceding.					…	Left train for 1 sec. ⎭ ←—1
59	Aug.	1	9	25	♃	126	53	125	46	7	Polaris.	Rapid; train for 2 secs.
60		8	10	10	? = ♀	…	…	…	…	…	…	Near π *Pegasi*, from χ *Persei*; long bright train, visible behind clouds.
61		26	10	30	= ♀	41	63	64	63	10	β Pegasi.	↙ No train.
62	Dec.	12	6	36	♂	146	40	159	40	9	θ Geminorum.	Near horizon; very slow; red; seen in bright moonlight.
63		13	10	8	♃	142	52	185	52	26	θ Geminorum.	Very slow; seen in bright moonlight.
64		23	8	44	♃	93	44	93	16	28	Draco.	Slow; across μ *Geminorum.*
65		”	9	27	1	38	60	10	63	13	α Aurigæ.	Rapid; across ε *Cassiopeiæ.*
66	1876. Jan.	31	9	13	? ♀	64	12 S.	60	30 S.	18	α Tauri.	↓ Almost vertical; seen through clouds.
67	Feb.	2	8	31	♂	175	31	185	35	9	γ Leonis.	Slow; above *Coma Berenices.*
68		4	7	35	= $\frac{1}{5}$th ☽	74	4	50	1 S.	25	γ Leonis?	→ From γ *Orionis* to α *Ceti.*
69		29	6	35	1	358	52	357	59	7	?	Very slow; ↗ just below β *Cassiopeiæ.*
70	Mar.	1	6	46	♃	…	…	…	…	…	…	↘ Very bright; shot near ζ and ν *Ursæ Majoris* in E.N.E.; long path, from α *Persei* or ε *Ursæ Maj.*
71		17	8	15	1	145	10	135	7 S.	20	ε Ursæ.	↘ Train; to W. of *Cor Hydræ.*